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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XC461

Takes of Marine Mammals Incidental to Specified Activities; Marine Geophysical Survey in the Northeast Atlantic Ocean, June to July 2013

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; issuance of an Incidental Take Authorization (ITA).

SUMMARY: In accordance with the Marine Mammal Protection Act (MMPA) regulations, notification is hereby given that NMFS has issued an Incidental Harassment Authorization (IHA) to the Lamont-Doherty Earth Observatory of Columbia University (L-DEO) to take marine mammals, by Level B harassment, incidental to conducting a marine geophysical (seismic) survey in the northeast Atlantic Ocean, June to July 2013.

DATES: Effective June 1 through August 25, 2013.

ADDRESSES: A copy of the final IHA and application are available by writing to P. Michael Payne, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910 or by telephoning the contacts listed here.

A copy of the IHA application containing a list of the references used in this document may be obtained by writing to the above address, telephoning the contact listed here (see FOR FURTHER INFORMATION CONTACT) or visiting the internet at:

<http://www.nmfs.noaa.gov/pr/permits/incidental.htm#applications>.

An “Environmental Analysis of a Marine Geophysical Survey by the R/V Marcus G. Langseth for the Northeast Atlantic Ocean, June-July 2013,” was prepared by LGL Ltd., Environmental Research Associates, on behalf of the National Science Foundation (NSF) (which owns the R/V Marcus G. Langseth) and L-DEO (which operates the R/V Marcus G. Langseth). NMFS also issued a Biological Opinion under Section 7 of the Endangered Species Act (ESA) to evaluate the effects of the survey and IHA on marine species listed as threatened and endangered. The NMFS Biological Opinion is available online at:

<http://www.nmfs.noaa.gov/pr/consultations/opinions.htm>. Documents cited in this notice may be viewed by appointment, during regular business hours, at the aforementioned address.

FOR FURTHER INFORMATION CONTACT: Howard Goldstein or Jolie Harrison, Office of Protected Resources, NMFS, 301-427-8401.

SUPPLEMENTARY INFORMATION:

Background

Section 101(a)(5)(D) of the MMPA, as amended (16 U.S.C. 1371 (a)(5)(D)), directs the Secretary of Commerce (Secretary) to authorize, upon request, the incidental, but not intentional, taking of small numbers of marine mammals of a species or population stock, by United States citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and, if the taking is limited to harassment, a notice of a proposed authorization is provided to the public for review.

Authorization for the incidental taking of small numbers of marine mammals shall be granted if NMFS finds that the taking will have a negligible impact on the species or stock(s), and will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant). The authorization must set forth the permissible methods of

taking, other means of effecting the least practicable adverse impact on the species or stock and its habitat, and requirements pertaining to the mitigation, monitoring and reporting of such takings. NMFS has defined "negligible impact" in 50 CFR 216.103 as "...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival."

Section 101(a)(5)(D) of the MMPA established an expedited process by which citizens of the United States can apply for an authorization to incidentally take small numbers of marine mammals by harassment. Section 101(a)(5)(D) of the MMPA establishes a 45-day time limit for NMFS's review of an application followed by a 30-day public notice and comment period on any proposed authorizations for the incidental harassment of small numbers of marine mammals. Within 45 days of the close of the public comment period, NMFS must either issue or deny the authorization.

Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as: any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment].

Summary of Request

On January 8, 2013, NMFS received an application from the L-DEO requesting that NMFS issue an IHA for the take, by Level B harassment only, of small numbers of marine mammals incidental to conducting a marine seismic survey on the high seas (i.e., International Waters) and within the Exclusive Economic Zone of Spain during June to July 2013. L-DEO

plans to use one source vessel, the R/V Marcus G. Langseth (Langseth) and a seismic airgun array to collect seismic data as part of the seismic survey in the northeast Atlantic Ocean. In addition to the operations of the seismic airgun array and hydrophone streamer, L-DEO intends to operate a multibeam echosounder and a sub-bottom profiler continuously throughout the survey. On March 21, 2013, NMFS published a notice in the Federal Register (78 FR 17359) making preliminary determinations and proposing to issue an IHA. The notice initiated a 30 day public comment period.

Acoustic stimuli (i.e., increased underwater sound) generated during the operation of the seismic airgun array may have the potential to cause a behavioral disturbance for marine mammals in the survey area. This is the principal means of marine mammal taking associated with these activities and L-DEO has requested an authorization to take 20 species of marine mammals by Level B harassment. Take is not expected to result from the use of the multibeam echosounder or sub-bottom profiler, for reasons discussed in this notice; nor is take expected to result from collision with the source vessel because it is a single vessel moving at a relatively slow speed (4.6 knots [kts]; 8.5 kilometers per hour [km/hr]; 5.3 miles per hour [mph]) during seismic acquisition within the survey, for a relatively short period of time (approximately 39 days). It is likely that any marine mammal would be able to avoid the vessel.

Description of the Specified Activity

L-DEO plans to conduct a high energy, two-dimensional (2D) and three-dimensional (3D) seismic survey in the northeast Atlantic Ocean, west of Spain (see Figure 1 of the IHA application). Water depths in the survey area range from approximately 3,500 to greater than 5,000 meters (m) (11,482.9 to 16,404.2 feet [ft]). The seismic survey would be scheduled to occur for approximately 39 days during June 1 to July 14, 2013. Some minor deviation from

these dates would be possible, depending on logistics and weather.

L-DEO plans to use conventional seismic methodology in the Deep Galicia Basin of the northeast Atlantic Ocean. The goal of the planned research is to collect data necessary to study rifted continental to oceanic crust transition in the Deep Galicia Basin west of Spain. This margin and its conjugate are among the best studied magma-poor, rifted margins in the world, and the focus of studies has been the faulting mechanics and modification of the upper mantle associated with such margins. Over the years, a combination of 2D reflection profiling, general marine geophysics, and ocean drilling have identified a number of interesting features of the margin. Among these are the S reflector, which has been interpreted to be detachment fault overlain with fault bounded, rotated, continental crustal blocks and underlain by serpentized peridotite, and the Peridotite Ridge, composed of serpentized peridotite and thought to be upper mantle exhumed to the seafloor during rifting.

To achieve the project's goals, the Principal Investigators (PIs), Drs. D. S. Sawyer (Rice University, J. K. Morgan (Rice University), and D. J. Shillington (L-DEO) propose to use a 3D seismic reflection survey, 2D survey, and a long-offset seismic program extending through the crust and S detachment into the upper mantle to characterize the last stage of continental breakup and the initiation of seafloor spreading, relate post-rifting subsidence to syn-rifting lithosphere deformation, and inform the nature of detachment faults. Ocean Bottom Seismometers (OBSs) and Ocean Bottom Hydrophones (OBHs) would also be deployed during the program. It is a cooperative program with scientists from the United Kingdom, Germany, Spain, and Portugal.

The planned survey would involve one source vessel, the R/V Marcus G. Langseth (Langseth). The Langseth would deploy an array of 18 airguns as an energy source with a total volume of approximately 3,300 in³. The receiving system would consist of four 6,000 m (19,685

ft) hydrophone streamers at 200 m (656.2 ft) spacing and up to 78 OBS and OBH instruments. The OBSs and OBHs would be deployed and retrieved by a second vessel, the R/V Poseidon (Poseidon), provided by the German Science Foundation. As the airgun array is towed along the survey lines, the hydrophone streamers would receive the returning acoustic signals and transfer the data to the on-board processing system. The OBS and OBHs record the returning acoustic signals internally for later analysis.

A total of approximately 5,834 km (3150.1 nautical miles [nmi]) of survey lines, including turns, will be shot in a grid pattern with a single line extending to the west (see Figure 1). There will be additional seismic operations in the survey area associated with equipment testing, ramp-up, and possible line changes or repeat coverage of any areas where initial data quality is sub-standard. In L-DEO's estimated take calculations, 25% has been added for those additional operations.

In addition to the operations of the airgun array, a Kongsberg EM 122 multibeam echosounder and a Knudsen Chirp 3260 sub-bottom profiler will also be operated from the Langseth continuously throughout the survey. All planned geophysical data acquisition activities would be conducted by L-DEO with on-board assistance by the scientists who have planned the study. The vessel will be self-contained, and the crew will live aboard the vessel for the entire cruise.

Dates, Duration, and Specified Geographic Region

The planned survey would encompass the area between approximately 41.5 to 42.5° North and approximately 11.5 to 17.5° West in the northeast Atlantic Ocean to the west of Spain. The cruise will be in International Waters (i.e., high seas) and in the Exclusive Economic Zone (EEZ) of Spain in water depths ranging from approximately 3,500 to greater than 5,000 m (see

Figure 1 of the IHA application). The exact dates of the planned activities depend on logistics and weather conditions. The Langseth would depart from Lisbon, Portugal or Vigo, Spain on June 1, 2013 and spend approximately 1 day in transit to the survey area. The seismic survey is expected to take approximately 39 days, with completion on approximately July 12, 2013. When the survey is completed, the Langseth will then transit back to Lisbon, Portugal or Vigo, Spain.

NMFS outlined the purpose of the program in a previous notice for the proposed IHA (78 FR 17359, March 21, 2013). The activities to be conducted have not changed between the proposed IHA notice and this final notice announcing the issuance of the IHA. For a more detailed description of the authorized action, including vessel and acoustic source specifications, the reader should refer to the notice for the proposed IHA (78 FR 17359, March 21, 2013), the IHA application, EA, and associated documents referenced above this section.

Comments and Responses

A notice of the proposed IHA for the L-DEO seismic survey was published in the Federal Register on March 21, 2013 (78 FR 17359). During the 30 day public comment period, NMFS received comments from the Marine Mammal Commission (Commission) and private individuals. The Commission and private individual's comments are online at <http://www.nmfs.noaa.gov/pr/permits/incidental.htm>. Following are their substantive comments and NMFS's responses.

Comment 1: The Commission recommends that NMFS require L-DEO to re-estimate the proposed buffer and exclusion zones and associated takes of marine mammals using the greatest sound speed from the survey area if sound at any depth travels at a speed greater than 1,521.6 m/second.

Response: Based upon the best available information and our analysis of the likely

effects of the specified activity on marine mammals and their habitat, we are satisfied that the data supplied by L-DEO and the information that we evaluated in the proposal including the referenced documents comprise the best available information on the likely effects of the activities on marine mammals. These data are sufficient to inform our analysis and determinations under the MMPA, ESA of 1973 (16 U.S.C. 1531 et seq.), and the National Environmental Policy Act (NEPA). The identified buffer and exclusion zones are appropriate for the survey. Thus, for this survey, we will not require L-DEO to re-estimate the proposed exclusion zones and buffer zones and associated number of marine mammal takes using operational and site-specific environmental parameters.

L-DEO has predicted received sound levels in the action area using their acoustic model (Diebold et al., 2010) as a function of distance from the airguns for the 36-airgun array and for a single 40-cubic inch (in³) airgun. This modeling approach uses ray tracing for the direct wave traveling from the array to the receiver and its associated source ghost (reflection at the air-water interface in the vicinity of the array), in a constant-velocity half space (an infinite homogeneous water column, not bounded by a seafloor). Because the L-DEO model assumes a homogeneous water column, the sound speed is held constant. For consistency with prior work by Dr. John Diebold, recent model results for the mitigation radii have been derived using 1,521.6 m/second, which in the airgun modeling software corresponds to a water temperature of 20 degrees Celsius. The mitigation radii are measured from the width of the isopleths at depth. The 180 dB (rms) isopleth, is broadest at around 450 to 500 m (1,476.4 to 1,640.4 ft) water depth, which provides a radius of 568 m (1,863.5 ft) around the sound source for the PSOs to monitor and mitigate for protected species. For the 160 dB (rms) level, the depth at which the radius is measured is 2,000 m (6,561.7ft), as the isopleth attains its broadest width at larger depths not relevant for marine

mammal mitigation. Thus, the choice of a constant value for input to deep water modeling needs to be compared to the average sound speed value through the first 450 to 500 m of water in the area, for the 180 dB (rms) radius, and compared to the average sound speed value to the first 2,000 m, for the 160 dB (rms) radius: the presence of possibly higher sound speed in a localized region near the sea surface would not, in itself alone, impact radii estimates. Measured sound speed profiles in the Gulf of Mexico presented in Figure 15 of Diebold et al. (2010) shows that there, 1,521 m/second is actually higher than the average speed through the first 450 to 500 m, and through the entire 1,700 m (5,577.4 ft) of the water column. No site-specific information is used in the L-DEO modeling. The value of 1,521.6 m/second is presently used to derive all models. A quick search for information in the vicinity of the planned northeast Atlantic Ocean survey area suggests that 1,521.6 m/second is not an unreasonably low value to use an average for input to the model. Overall, the choice of the constant sound speed is a secondary factor governing model results, the main assumption remains that of a homogeneous water layer.

Because the model by Dr. John Diebold cannot be adjusted to add environmental parameters, L-DEO would require another modeling approach to modify the sound speed profile to match site-specific parameters. The goal of the L-DEO modeling is to have a model that is broadly applicable and not have the typical data limitations and significant parameter assumptions that often limit utility of “site specific” investigations. Usage of the 1,521.6 m/second is a reasonable model variable for this survey location, and for most others. Typically, ocean temperatures, which influence the speed of sound propagation through water, are most variable towards the ocean surface, and become more constant at depth. The deep-water mitigation radii calculated by the Diebold modeling for the Langseth’s airgun array are determined from the spread of the acoustic source from the full airgun array and is at its widest

in deeper waters, not near the sea surface (see Figure 2 of the NSF/USGS PEIS [Diebold et al., 2010]). The deep-water mitigation radii predicted by the L-DEO model were previously shown to be conservative in the Gulf of Mexico (Tolstoy et al., 2009; Diebold et al., 2010). Therefore, using a maximum sound speed variable for the model, which at this site would likely be at the surface, would be less reflective of the entire water column and a poorer value to use in the model.

Of note, in cold water scenarios, use of the 1,521.6 m/second as an average for the entire water column might actually yield overestimated radii. Although the model might yield results that would be generally even more conservative, we continue to use the existing radii determined with 1,521.6 m/second in cold water scenarios anyway. Therefore, while the sound speed can be adjusted in the L-DEO model, the model has already been shown to be conservative in temperate locations and increasing the sound speed calculations in areas in colder temperatures would only make the model generally more conservative in its radii predictions.

L-DEO's application and NSF's environmental analysis includes detailed information on the study, and their modeling process of the calibration experiment in shallow, intermediate, and deep water. Additionally, the conclusions in Appendix H of the "2011 Programmatic Environmental Impact Statement/Overseas Environmental Impact Statement for Marine Seismic Research Funded by the National Science Foundation or Conducted by the U.S. Geological Survey" (NSF/USGS PEIS, 2011) also show that L-DEO's model represents the actual produced sound levels, particularly within the first few kilometers, where the predicted zone (i.e., exclusion zone) lie. At greater distances, local oceanographic variations begin to take effect, and L-DEO's model tends to over predict zones. Because the modeling matches the observed measurement data, the authors concluded that those using the models to predict zones can

continue to do so, including predicting exclusion zones around the vessel for various tow depths. At present, L-DEO's model does not account for site-specific environmental conditions and the calibration study analysis of the model predicted that using site-specific information may actually estimate less conservative exclusion zones at greater distances.

While it is difficult to estimate exposures of marine mammals to acoustic stimuli, NMFS is confident that L-DEO's approach to quantifying the exclusion and buffer zones uses the best available scientific information and estimation methodologies.

Comment 2: The Commission recommends that NMFS require L-DEO to correct beaked whale and fin whale density estimates using the 95 percent confidence intervals and recalculate the estimated numbers of takes – the corrected beaked whale density then should be applied to all beaked whale species (including Cuvier's beaked whale, northern bottlenose whale, and Mesoplodon spp.).

Response: Confidence intervals are used to indicate reliability of an estimate and indicate the variation that could occur if animal distribution was the same at the time of the planned seismic survey as during the survey when the data was collected. It is not possible to “correct” densities using confidence intervals, as the given mean is the best estimate, although confidence intervals could possibly be used to estimate maximum densities (i.e., the confidence interval themselves or the data required to calculate them [an estimate of variance and the sample size]). However, below we describe why we do not think it is appropriate to apply confidence intervals to estimate maximum densities for beaked whales.

L-DEO has used Cuvier's beaked whale density to estimate density for all beaked whale species. However, Cuvier's beaked whale was by far the most abundant whale seen (13 to 15 sightings) in the southern part of the study area (the Bay of Biscay and off northwest Spain)

during the surveys that gave densities for beaked whales as a group, likely resulting in overestimates for density for the other species. Therefore, it is not appropriate to add another layer of potential overestimation in density by using the 95% confidence interval. Sowerby's beaked whale the northern bottlenose whale were abundant (the only beaked whale identified) in the northwestern part of the study area (off the United Kingdom).

NMFS used IWC (2007) data for the northeast and north-central Atlantic Ocean to estimate fin whale density and estimate the number of potential takes by Level B harassment. The NMFS Biological Opinion describes the exposure analysis and is available online at: <http://www.nmfs.noaa.gov/pr/consultations/opinions.htm>.

Comment 3: The Commission recommends that NMFS require a clearance time of 60 minutes for deep-diving species (i.e., beaked whales and sperm whales) if the animal was not observed to have left the exclusion zone after a power-down or shut-down.

Response: NMFS recognizes that several species of deep-diving cetaceans are capable of remaining underwater for more than 30 minutes (e.g., sperm whales and several species of beaked whales); however, for the following reasons NMFS believes that 30 minutes is an adequate length for the monitoring period prior to the ramp-up of the airguns:

(1) Because the Langseth is required to monitor before ramp-up of the airgun array, the time monitoring prior to the start-up of any but the smallest array is effectively longer than 30 minutes (ramp-up will begin with the smallest airgun in the array and airguns will be added in sequence such that the source level of the array will increase in steps not exceeding approximately 6 dB per five minute period over a total duration of about 30 minutes);

(2) In many cases Protected Species Observers (PSOs) are observing during times when L-DEO is not operating the seismic airguns and would observe the area prior to the 30-minute

observation period;

(3) The majority of the species that may be exposed do not stay underwater more than 30 minutes;

(4) All else being equal and if deep-diving individuals happened to be in the area in the short time immediately prior to the pre-ramp-up monitoring, if an animal's maximum underwater dive time is 45 minutes, then there is only a one in three chance that the last random surfacing would occur prior to the beginning of the required 30-minute monitoring period and that the animal would not be seen during that 30-minute period; and

(5) Finally, seismic vessels are moving continuously (because of the long, towed airgun array and streamer) and NMFS believes that unless the animal submerges and follows at the speed of the vessel (highly unlikely, especially when considering that a significant part of their movement is vertical [deep-diving]), the vessel will be far beyond the length of the exclusion zone within 30 minutes, and therefore it will be safe to start the airguns again.

Comment 4: The Commission recommends that NMFS provide additional justification for its preliminary determination that the proposed monitoring program will be sufficient to detect, with a high level of confidence, all marine mammals within or entering the exclusion and buffer zones – such justification should (1) identify those species that NMFS believes can be detected with a high degree of confidence using visual monitoring only under the expected environmental conditions; (2) describe detection probability as a function of distance from the vessel; (3) describe changes in detection probability under various sea state and weather conditions and light levels; and (4) explain how close to the vessel marine mammals must be for PSOs to achieve high nighttime detection rates.

Response: NMFS believe that the planned monitoring program would be sufficient to

detect (using visual monitoring and passive acoustic monitoring), with reasonable certainty, marine mammals within or entering the identified exclusion zones. Also, NMFS expects some animals to avoid areas around the airgun array ensounded at the level of the exclusion zone.

NMFS acknowledge that the detection probability of certain species of marine mammals varies depending on the animal's size and behavior, as well as sea state, weather conditions, and light levels. The detectability of marine mammals likely decreases in low light (i.e., darkness), higher Beaufort sea state and wind conditions, and poor weather (e.g., fog and/or rain).

However, at present, NMFS view the combination of visual monitoring and passive acoustic monitoring as the most effective monitoring and mitigation techniques available for detecting marine mammals within or entering the exclusion zone. The final monitoring and mitigation measures are the most effective and feasible measures, and NMFS is not aware of any additional measures which could meaningfully increase the likelihood of detecting marine mammals in and around the exclusion zone. Further, public comment has not revealed any additional monitoring and mitigation measures that could be feasibly implemented to increase the effectiveness of detection.

NSF and L-DEO are receptive to incorporating proven technologies and techniques to enhance the current monitoring and mitigation program. Until proven technological advances are made, nighttime mitigation measures during operations include combinations of the use of PSOs for ramp-ups, passive acoustic monitoring, night vision devices provided to PSOs, and continuous shooting of a mitigation airgun. Should the airgun array be powered-down the operation of a single airgun would continue to serve as a sound deterrent to marine mammals. In the event of a complete shut-down of the airgun array at night for mitigation or repairs, L-DEO suspends the data collection until 30 minutes after nautical twilight-dawn (when PSOs are able

clear the exclusion zone). L-DEO will not activate the airguns until the entire exclusion zone is visible and free of marine mammals for at least 30 minutes.

In cooperation with NMFS, L-DEO will be conducting efficacy experiments of night vision devices during a future Langseth cruise. In addition, in response to a recommendation from NMFS, L-DEO is evaluating the use of forward-looking thermal imaging cameras to supplement nighttime monitoring and mitigation practices. During other seismic and seafloor mapping surveys throughout the world, L-DEO has successfully used these devices while conducting nighttime seismic operations.

Comment 5: The Commission recommends that NMFS consult with the relevant entities (i.e., L-DEO, NSF, U.S. Geological Survey [USGS]) to develop, validate, and implement a monitoring program that provides a scientifically sound, reasonably accurate assessment of the types of marine mammal taking and the numbers of marine mammals taken – the assessment should account for availability and detection biases associated with the geophysical survey observers.

Response: There will be periods of transit time during the cruise, and PSOs will be on watch prior to and after the seismic portions of the surveys, in addition to during the surveys. The collection of this visual observational data by PSOs may contribute to baseline data on marine mammals (presence/absence) and provide some generalized support for estimated take numbers, but it is unlikely that the information gathered from these cruises alone would result in any statistically robust conclusions for any particular species because of the small number of animals typically observed.

NMFS acknowledges the Commission's recommendations and is open to further coordination with the Commission, NSF (the vessel owner) and L-DEO (the ship operator on

behalf of NSF), to develop, validate, and implement a monitoring program that will provide or contribute towards a more scientifically sound and reasonably accurate assessment of the types of marine mammal taking and the number of marine mammals taken

For clarification purposes, USGS is not participating or involved in L-DEO's action (i.e., the science endeavor) that has been funded by NSF. USGS is a separate Federal agency that is part of the Department of Interior, while NSF is an independent Federal agency.

Comment 6: Several private citizens opposed the issuance of the IHA by NMFS and the conduct of the marine seismic survey in the northeast Atlantic Ocean by L-DEO and NSF. They commenters state that they do not support the use of government funds to conduct a seismic survey for oil and gas purposes in the Atlantic Ocean or anywhere else. The commenters state that numerous strandings and deaths of marine mammals are linked to acoustic trauma caused by activities using seismic airguns and sonar. The airguns pose serious threats to endangered North Atlantic right, humpback, sei, fin, blue, and sperm whales. They also believe that using lookouts (i.e., PSOs) for marine mammals is ineffective, especially since the activities will be occurring in deep waters where deep-diving animals spend most of their lives underwater and not on the surface where they cannot be detected.

Response: L-DEO's planned seismic survey is not being conducted for oil and gas exploration purposes, it is for academic science and research. As described in detail in the Federal Register notice for the proposed IHA (78 FR 17359, March 21, 2013), as well as in this document, NMFS does not believe that L-DEO's marine seismic survey would cause injury, serious injury, or mortality to marine mammals, nor are those authorized under the IHA. The required monitoring and mitigation measures that L-DEO would implement during the seismic survey would further reduce the adverse effect on marine mammals to the lowest levels

practicable. NMFS anticipates only behavioral disturbance to occur during the conduct of the seismic survey. L-DEO's planned activities is for scientific research purposes, it is not for oil and gas exploration or considered a military readiness activity.

Description of the Marine Mammals in the Specified Geographic Area of the Specified Activity

Thirty-nine marine mammal species (36 cetaceans [whales, dolphins, and porpoises]) (29 odontocetes and 7 mysticetes] and 3 pinnipeds [seals and sea lions]) are known to or could occur in the eastern North Atlantic study area. Several of these species are listed as endangered under the U.S. Endangered Species Act of 1973 (ESA; 16 U.S.C. 1531 et seq.), including the North Atlantic right (Eubalaena glacialis), humpback (Megaptera novaeangliae), sei (Balaenoptera borealis), fin (Balaenoptera physalus), blue (Balaenoptera musculus), and sperm (Physeter macrocephalus) whales. Nine cetacean species, although present in the wider eastern North Atlantic ocean, likely would not be found near the study area at approximately 42° North because their ranges generally do not extend south of approximately 45° North in the northeastern Atlantic waters (i.e., Atlantic white-sided dolphin [Lagenorhynchus acutus] and white-beaked dolphin [Lagenorhynchus albirostris]), or their ranges in the northeast Atlantic ocean generally do not extend north of approximately 20° North (Clymene dolphin [Stenella clymene]), 30° North (Fraser's dolphin [Lagenodelphis hosei]), 34 ° North (spinner dolphin [Stenella longirostris]), 35 ° North (melon-headed whale [Peponocephala electra]), 37 ° North (rough-toothed dolphin [Steno bredandensis]), or 40 ° North (Bryde's whale [Balaenoptera brydei] and pantropical spotted dolphin [Stenella attenuata]). Although Spitz et al. (2011) reported two strandings records of melon-headed whales for the Bay of Biscay, this species will not be discussed further, as it is unlikely to occur in the survey area.

The harbor porpoise (Phocoena phocoena) does not occur in deep offshore waters. No

harbor porpoise were detected visually or acoustically during summer surveys off the continental shelf in the Biscay Bay area during 1989 and 2007 (Lens, 1991; Basto d' Andrade, 2008; Anonymous, 2009). Pinniped species are also not known to occur in the deep waters of the survey area.

General information on the taxonomy, ecology, distribution, and movements, and acoustic capabilities of marine mammals are given in sections 3.6.1 and 3.7.1 of the “Final Programmatic Environmental Impact Statement/Overseas Environmental Impact Statement for Marine Seismic Research Funded by the National Science Foundation or Conducted by the U.S. Geological Survey” (NSF/USGS PEIS). One of the qualitative analysis areas defined in the PEIS is on the Mid-Atlantic Ridge, at 26° North, 40 ° West, approximately 2,800 km (1,511.9 nmi) from the survey area. The general distribution of mysticetes and odontocetes in the North Atlantic Ocean is discussed in sections 3.6.3.4 and 3.7.3.4 of the NSF/USGS PEIS, respectively. The rest of this section deals specifically with species distributions off the north and west coast of the Iberian Peninsula.

Several systematic surveys have been conducted in the Bay of Biscay area, which has been found to be one of the most productive areas and the center of highest cetacean diversity in the northeast Atlantic Ocean (Hoyt, 2005). The second North Atlantic Sightings Survey (NASS) occurred in waters off the continental shelf from the southern U.K. to northern Spain in July to August, 1989 (Lens, 1991). The Cetacean Offshore Distribution and Abundance in the European Atlantic (CODA) included surveys from the U.K. to southern Spain during July, 2007 (Basto d' Andrade, 2008; Anonymous, 2009). Additional information is available from coastal surveys off northwest Spain (e.g., Lopez et al., 2003), and sighting records off western central (Brito et al., 2009) and southern Portugal (Castor et al., 2010). Records from the Ocean Biogeographic

Information System (OBIS) database hosted by Rutgers and Duke University (Read et al., 2009) were also included. Table 1 (below) presents information on the abundance, distribution, population status, and conservation status of the species of marine mammals that may occur in the study area during June to July, 2013.

Table 1. The habitat, regional abundance, and conservation status of marine mammals that may occur in or near the seismic survey area in the northeast Atlantic Ocean. (See text and Table 3 in L-DEO's application for further details.)

Species	Habitat	Population Estimate in the North Atlantic	ESA ¹	MMPA ²
Mysticetes				
North Atlantic right whale (<u>Eubalaena glacialis</u>)	Pelagic, shelf and coastal	396 ³	EN	D
Humpback whale (<u>Megaptera novaeangliae</u>)	Mainly nearshore, banks	11,570 ⁴	EN	D
Minke whale (<u>Balaenoptera acutorostrata</u>)	Pelagic and coastal	121,000 ⁵	NL	NC
Sei whale (<u>Balaenoptera borealis</u>)	Primarily offshore, pelagic	12,000 to 13,000 ⁶	EN	D
Fin whale (<u>Balaenoptera physalus</u>)	Continental slope, pelagic	24,887 ⁷	EN	D
Blue whale (<u>Balaenoptera musculus</u>)	Pelagic, shelf, coastal	937 ⁸	EN	D
Odontocetes				
Sperm whale (<u>Physeter macrocephalus</u>)	Pelagic, deep sea	13,190 ⁹	EN	D
Pygmy sperm whale (<u>Kogia breviceps</u>)	Deep waters off the shelf	395 ^{3,10}	NL	NC
Dwarf sperm whale (<u>Kogia sima</u>)	Deep waters off the shelf		NL	NC
Cuvier's beaked whale (<u>Ziphius cavirostris</u>)	Slope and Pelagic	6,992 ¹¹ 100,000 ¹²	NL	NC
Northern bottlenose whale (<u>Hyperoodon ampullatus</u>)	Pelagic	40,000 ¹³	NL	NC
True's beaked whale (<u>Mesoplodon mirus</u>)	Pelagic	6,992 ¹¹	NL	NC
Gervais' beaked whale (<u>Mesoplodon europaeus</u>)	Pelagic	6,992 ¹¹	NL	NC
Sowerby's beaked whale (<u>Mesoplodon bidens</u>)	Pelagic	6,992 ¹¹	NL	NC
Blainville's beaked whale (<u>Mesoplodon densirostris</u>)	Pelagic	6,992 ¹¹	NL	NC

Bottlenose dolphin (<u>Tursiops truncatus</u>)	Coastal, oceanic, shelf break	19,295 ¹⁴	NL	NC D - Western North Atlantic coastal
Atlantic spotted dolphin (<u>Stenella frontalis</u>)	Shelf, offshore	50,978 ³	NL	NC
Striped dolphin (<u>Stenella coeruleoalba</u>)	Off continental shelf	67,414 ¹⁴	NL	NC
Short-beaked common dolphin (<u>Delphinus delphis</u>)	Shelf, pelagic, seamounts	116,709 ¹⁴	NL	NC
Risso's dolphin (<u>Grampus griseus</u>)	Deep water, seamounts	20,479 ³	NL	NC
Pygmy killer whale (<u>Feresa attenuata</u>)	Pelagic	NA	NL	NC
False killer whale (<u>Pseudorca crassidens</u>)	Pelagic	NA	NL	NC
Killer whale (<u>Orcinus orca</u>)	Pelagic, shelf, coastal	NA	NL EN - Southern resident	NC D - Southern resident, AT1 transient
Short-finned pilot whale (<u>Globicephala macrorhynchus</u>)	Pelagic, shelf coastal	780,000 ¹⁵	NL	NC
Long-finned pilot whale (<u>Globicephala melas</u>)	Mostly pelagic		NL	NC

NA = Not available or not assessed.

¹ U.S. Endangered Species Act: EN = Endangered, T = Threatened, DL = Delisted, NL = Not listed.

² U.S. Marine Mammal Protection Act: D = Depleted, NC = Not Classified.

³ Western North Atlantic, in U.S. and southern Canadian waters (Waring *et al.*, 2012).

⁴ Likely negatively biased (Stevick *et al.*, 2003).

⁵ Central and Northeast Atlantic (IWC, 2012).

⁶ North Atlantic (Cattanach *et al.*, 1993).

⁷ Central and Northeast Atlantic (Vikingsson *et al.*, 2009).

⁸ Central and Northeast Atlantic (Pike *et al.*, 2009).

⁹ For the northeast Atlantic, Faroes-Iceland, and the U.S. east coast (Whitehead, 2002).

¹⁰ Both *Kogia* species.

¹¹ For all beaked whales (Anonymous, 2009).

¹² Worldwide estimate (Taylor *et al.*, 2008).

¹³ Eastern North Atlantic (NAMMCO, 1995).

¹⁴ European Atlantic waters beyond the continental shelf (Anonymous, 2009).

¹⁵ *Globicephala* spp. combined, Central and Eastern North Atlantic (IWC, 2012).

Refer to sections 3 and 4 of L-DEO's application for detailed information regarding the abundance and distribution, population status, and life history and behavior of these other marine mammal species and their occurrence in the project area. The application also presents how L-DEO calculated the estimated densities for the marine mammals in the survey area. NMFS has reviewed these data and determined them to be the best available scientific information for the purposes of the IHA.

Potential Effects on Marine Mammals

Acoustic stimuli generated by the operation of the airguns, which introduce sound into the marine environment, may have the potential to cause Level B harassment of marine mammals in the survey area. The effects of sounds from airgun operations might include one or more of the following: tolerance, masking of natural sounds, behavioral disturbance, temporary or permanent hearing impairment, or non-auditory physical or physiological effects (Richardson *et al.*, 1995; Gordon *et al.*, 2004; Nowacek *et al.*, 2007; Southall *et al.*, 2007).

Permanent hearing impairment, in the unlikely event that it occurred, would constitute injury, but temporary threshold shift (TTS) is not an injury (Southall *et al.*, 2007). Although the possibility cannot be entirely excluded, it is unlikely that the planned project would result in any cases of temporary or permanent hearing impairment, or any significant non-auditory physical or physiological effects. Based on the available data and studies described here, some behavioral disturbance is expected, but NMFS expects the disturbance to be localized and short-term. NMFS described the range of potential effects from the activity in the notice of the proposed IHA (78 FR 17359, March 21, 2013). A more comprehensive review of these issues can be found in the NSF/USGS (2011).

The notice of the proposed IHA (78 FR 17359, March 21, 2013) included a discussion of

the effects of sounds from airguns on mysticetes and odontocetes including tolerance, masking, behavioral disturbance, hearing impairment, and other non-auditory physical effects. NMFS refers the reader to L-DEO's application and EA for additional information on the behavioral reactions (or lack thereof) by all types of marine mammals to seismic vessels.

Anticipated Effects on Marine Mammal Habitat

NMFS included a detailed discussion of the potential effects of this action on marine mammal habitat, including physiological and behavioral effects on marine fish and invertebrates in the notice of the proposed IHA (78 FR 17359, March 21, 2013). The seismic survey will not result in any permanent impact on habitats used by the marine mammals in the survey area, including the food sources they use (i.e., fish and invertebrates), and there will be no physical damage to any habitat. While NMFS anticipates that the specified activity may result in marine mammals avoiding certain areas due to temporary ensonification, this impact to habitat is temporary and reversible, which was considered in further detail in the notice of the proposed IHA (78 FR 17359, March 21, 2013), as behavioral modification. The main impact associated with the activity will be temporarily elevated noise levels and the associated direct effects on marine mammals.

Mitigation

In order to issue an Incidental Take Authorization (ITA) under section 101(a)(5)(D) of the MMPA, NMFS must set forth the permissible methods of taking pursuant to such activity, and other means of effecting the least practicable impact on such species or stock and its habitat, paying particular attention to rookeries, mating grounds, and areas of similar significance, and the availability of such species or stock for taking for certain subsistence uses.

L-DEO has reviewed the following source documents and has incorporated a suite of appropriate mitigation measures into their project description.

(1) Protocols used during previous NSF and USGS-funded seismic research cruises as approved by NMFS and detailed in the recently completed “Final Programmatic Environmental Impact Statement/Overseas Environmental Impact Statement for Marine Seismic Research Funded by the National Science Foundation or Conducted by the U.S. Geological Survey;”

(2) Previous IHA applications and IHAs approved and authorized by NMFS; and

(3) Recommended best practices in Richardson et al. (1995), Pierson et al. (1998), and Weir and Dolman, (2007).

To reduce the potential for disturbance from acoustic stimuli associated with the activities, L-DEO and/or its designees shall implement the following mitigation measures for marine mammals:

(1) Planning phase mitigation;

(2) Exclusion zones around the airgun(s);

(3) Power-down procedures;

(4) Shut-down procedures;

(5) Ramp-up procedures; and

(6) Special procedures for situations or species of concern.

Planning Phase – Mitigation of potential impacts from the planned activities begins during the planning phases of the planned activities. Part of the considerations was whether the research objectives could be met with a smaller source than the full, 36-airgun array (6,600 in³) used on the Langseth, and it was decided that the scientific objectives could be met using two 18-

airgun arrays, operating in “flip-flop” mode, and towed at a depth of approximately 9 m. Thus, the source volume will not exceed 3,300 in³ at any time.

Exclusion Zones – L-DEO use radii to designate exclusion and buffer zones and to estimate take for marine mammals. Table 2 (see below) shows the distances at which one would expect marine mammal exposures to received sound levels (160 and 180/190 dB) from the 18 airgun array and a single airgun. (The 180 dB level shut-down criteria are applicable to cetaceans as specified by NMFS [2000].) L-DEO used these levels to establish the exclusion and buffer zones.

Received sound levels have been modeled by L-DEO for a number of airgun configurations, including the 18 airguns, in relation to distance and direction from the airguns (see Figures 2 and 3 of the IHA application). The model does not allow for bottom interaction, and is most directly applicable to deep water. Based on the modeling, estimates, of the maximum distances from the airguns where sound levels are predicted to be 180, and 160 dB re 1 Pa (rms) in deep water were determined (see Table 2 below).

Empirical data concerning the 190, 180, and 160 dB (rms) distances were acquired for various airgun arrays based on measurements during the acoustic verification studies conducted by L-DEO in the northern GOM in 2003 (Tolstoy et al., 2004) and 2007 to 2008 (Tolstoy et al., 2009). The empirical data for the 6, 10, 12, and 20 airgun arrays indicate that, for deep water, the L-DEO model tends to overestimate the received sound levels at a given distance (Tolstoy et al., 2004). The 180 dB (rms) radius is the shut-down criteria applicable to cetaceans as specified by NMFS (2000); these levels were used to establish exclusion zones. Therefore, the assumed 180 dB radii are 568 m (1,863.5 ft), respectively. If the PSO detects a marine mammal(s) within or about to enter the appropriate exclusion zone, the airguns will be shut-down immediately.

Table 2 summarizes the predicted distances at which sound levels (160 and 180 dB [rms]) are expected to be received from the 18 airgun array and a single airgun operating in deep water depths.

Table 2. Measured (array) or predicted (single airgun) distances to which sound levels ≥ 180 and 160 dB re: 1 μ Pa (rms) could be received in deep water during the survey in the northeast Atlantic Ocean, June to July, 2013.

Sound Source and Volume	Tow Depth (m)	Water Depth (m)	Predicted RMS Radii Distances (m)	
			180 dB	160 dB
Single Bolt airgun (40 in ³)	9	>1,000 m	100 m (328.1 ft)	385 m (1,263.1 ft)
18 airguns (3,300 in ³)	9	>1,000 m	568 m (1,863.5 ft)	4,550 m (14,927.8 ft)

If the Protected Species Visual Observer (PSVO) detects marine mammal(s) within or about to enter the appropriate exclusion zone, the Langseth crew will immediately power-down the airgun array, or perform a shut-down if necessary (see “Shut-down Procedures”).

Power-down Procedures – A power-down involves decreasing the number of airguns in use to one airgun, such that the radius of the 180 dB zone is decreased to the extent that the observed marine mammal(s) are no longer in or about to enter the exclusion zone for the full airgun array. A power-down of the airgun array can also occur when the vessel is moving from the end of one seismic trackline to the start of the next trackline. During a power-down for mitigation, L-DEO will operate one airgun. The continued operation of one airgun is intended to (a) alert marine mammals to the presence of the seismic vessel in the area; and, (b) retain the option of initiating a ramp-up to full operations under poor visibility conditions. In contrast, a shut-down occurs when all airgun activity is suspended.

If the PSVO detects a marine mammal outside the exclusion zone and is likely to enter the exclusion zone, L-DEO will power-down the airguns to reduce the size of the 180 dB exclusion zone before the animal is within the exclusion zone. Likewise, if a mammal is already within the exclusion zone, when first detected L-DEO will power-down the airguns immediately. During a power-down of the airgun array, L-DEO will operate the single 40 in³ airgun, which has a smaller exclusion zone. If the PSVO detects a marine mammal within or near the smaller exclusion zone around that single airgun (see Table 1), L-DEO will shut-down the airgun (see next section).

Resuming Airgun Operations After a Power-down - Following a power-down, the Langseth will not resume full airgun activity until the marine mammal has cleared the 180 dB exclusion zone (see Table 2). The PSO will consider the animal to have cleared the exclusion zone if:

- The observer has visually observed the animal leave the exclusion zone, or
- An observer has not sighted the animal within the exclusion zone for 15 minutes for species with shorter dive durations (i.e., small odontocetes or pinnipeds), or 30 minutes for species with longer dive durations (i.e., mysticetes and large odontocetes, including sperm, pygmy sperm, dwarf sperm, and beaked whales); The Langseth crew will resume operating the airguns at full power after 15 minutes of sighting any species with short dive durations (i.e., small odontocetes or pinnipeds). Likewise, the crew will resume airgun operations at full power after 30 minutes of sighting any species with longer dive durations (i.e., mysticetes and large odontocetes, including sperm, pygmy sperm, dwarf sperm, and beaked whales).

Because the vessel has transited away from the vicinity of the original sighting during the 8 minute period, implementing ramp-up procedures for the full array after an extended power-

down (i.e., transiting for an additional 35 minutes from the location of initial sighting) would not meaningfully increase the effectiveness of observing marine mammals approaching or entering the exclusion zone for the full source level and would not further minimize the potential for take. The Langseth's PSOs are continually monitoring the exclusion zone for the full source level while the mitigation airgun is firing. On average, PSOs can observe to the horizon (10 km or 5.4 nmi) from the height of the Langseth's observation deck and should be able to state with a reasonable degree of confidence whether a marine mammal would be encountered within this distance before resuming airgun operations at full power.

Shut-down Procedures - L-DEO will shut-down the operating airgun(s) if a marine mammal is seen within or approaching the exclusion zone for the single airgun. L-DEO will implement a shut-down:

(1) If an animal enters the exclusion zone of the single airgun after L-DEO has initiated a power-down; or

(2) If an animal is initially seen within the exclusion zone of the single airgun when more than one airgun (typically the full airgun array) is operating (and it is not practical or adequate to reduce exposure to less than 180 dB [rms]).

Resuming Airgun Operations After a Shut-down - Following a shut-down in excess of 8 minutes, the Langseth crew will initiate a ramp-up with the smallest airgun in the array (40 in³). The crew will turn on additional airguns in a sequence such that the source level of the array will increase in steps not exceeding 6 dB per five-minute period over a total duration of approximately 30 minutes. During ramp-up, the PSOs will monitor the exclusion zone, and if he/she sights a marine mammal, the Langseth crew will implement a power-down or shut-down as though the full airgun array were operational.

During periods of active seismic operations, there are occasions when the Langseth crew will need to temporarily shut-down the airguns due to equipment failure or for maintenance. In this case, if the airguns are inactive longer than eight minutes, the crew will follow ramp-up procedures for a shut-down described earlier and the PSOs will monitor the full exclusion zone and will implement a power-down or shut-down if necessary.

If the full exclusion zone is not visible to the PSO for at least 30 minutes prior to the start of operations in either daylight or nighttime, the Langseth crew will not commence ramp-up unless at least one airgun (40 in³ or similar) has been operating during the interruption of seismic survey operations. Given these provisions, it is likely that the vessel's crew will not ramp-up the airgun array from a complete shut-down at night or in thick fog, because the outer part of the zone for that array will not be visible during those conditions.

If one airgun has operated during a power-down period, ramp-up to full power will be permissible at night or in poor visibility, on the assumption that marine mammals will be alerted to the approaching seismic vessel by the sounds from the single airgun and could move away. The vessel's crew will not initiate ramp-up of the airguns if a marine mammal is sighted within or near the applicable exclusion zones during the day or close to the vessel at night.

Ramp-up Procedures – Ramp-up of an airgun array provides a gradual increase in sound levels, and involves a step-wise increase in the number and total volume of airguns firing until the full volume of the airgun array is achieved. The purpose of a ramp-up is to “warn” marine mammals in the vicinity of the airguns, and to provide the time for them to leave the area and thus avoid any potential injury or impairment of their hearing abilities. L-DEO will follow a ramp-up procedure when the airgun array begins operating after an 8 minute period without

airgun operations or when a shut-down has exceeded that period. L-DEO has used similar periods (approximately 8 to 10 min) during previous L-DEO surveys.

Ramp-up will begin with the smallest airgun in the array (40 in³). Airguns will be added in a sequence such that the source level of the array will increase in steps not exceeding six dB per five minute period over a total duration of approximately 35 minutes. During ramp-up, the PSOs will monitor the exclusion zone, and if marine mammals are sighted, L-DEO will implement a power-down or shut-down as though the full airgun array were operational.

If the complete exclusion zone has not been visible for at least 30 minutes prior to the start of operations in either daylight or nighttime, L-DEO will not commence the ramp-up unless at least one airgun (40 in³ or similar) has been operating during the interruption of seismic survey operations. Given these provisions, it is likely that the airgun array will not be ramped-up from a complete shut-down at night or in thick fog, because the outer part of the exclusion zone for that array will not be visible during those conditions. If one airgun has operated during a power-down period, ramp-up to full power will be permissible at night or in poor visibility, on the assumption that marine mammals will be alerted to the approaching seismic vessel by the sounds from the single airgun and could move away. L-DEO will not initiate a ramp-up of the airguns if a marine mammal is sighted within or near the applicable exclusion zones.

Use of a Small-Volume Airgun during Turns and Maintenance

Throughout the seismic survey, particularly during turning movements, and short-duration equipment maintenance activities, L-DEO will employ the use of a small-volume airgun (i.e., 40 in³ “mitigation airgun”) to deter marine mammals from being within the immediate area of the seismic operations. The mitigation airgun would be operated at approximately one shot

per minute and would not be operated for longer than three hours in duration (turns may last two to three hours for the project).

During turns or brief transits (e.g., less than three hours) between seismic tracklines, one mitigation airgun will continue operating. The ramp-up procedure will still be followed when increasing the source levels from one airgun to the full airgun array. However, keeping one airgun firing will avoid the prohibition of a “cold start” during darkness or other periods of poor visibility. Through use of this approach, seismic operations may resume without the 30 minute observation period of the full exclusion zone required for a “cold start,” and without ramp-up if operating with the mitigation airgun for under 8 minutes. PSOs will be on duty whenever the airguns are firing during daylight, during the 30 minute periods prior to ramp-ups.

Special Procedures for Situations or Species of Concern - It is unlikely that a North Atlantic right whale would be encountered, but if so, the airguns will be shut-down immediately if one is sighted at any distance from the vessel because of its rarity and conservation status. The airgun array shall not resume firing until 30 minutes after the last documented whale visual sighting. Concentrations of humpback, sei, fin, blue, and/or sperm whales will be avoided if possible (i.e., exposing concentrations of animals to 160 dB), and the array will be powered-down if necessary. For purposes of this planned survey, a concentration or group of whales will consist of three or more individuals visually sighted that do not appear to be traveling (e.g., feeding, socializing, etc.).

NMFS has carefully evaluated the applicant’s mitigation measures and has considered a range of other measures in the context of ensuring that NMFS prescribes the means of effecting the least practicable adverse impact on the affected marine mammal species and stocks and their

habitat. NMFS's evaluation of potential measures included consideration of the following factors in relation to one another:

- (1) The manner in which, and the degree to which, the successful implementation of the measure is expected to minimize adverse impacts to marine mammals;
- (2) The proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and
- (3) The practicability of the measure for applicant implementation.

Monitoring and Reporting

In order to issue an ITA for an activity, section 101(a)(5)(D) of the MMPA states that NMFS must set forth "requirements pertaining to the monitoring and reporting of such taking." The MMPA implementing regulations at 50 CFR 216.104 (a)(13) indicate that requests for IHAs must include the suggested means of accomplishing the necessary monitoring and reporting that will result in increased knowledge of the species and of the level of taking or impacts on populations of marine mammals that are expected to be present in the action area.

Monitoring

L-DEO will conduct marine mammal monitoring during the seismic survey, in order to implement the mitigation measures that require real-time monitoring. L-DEO's "Monitoring Plan" is described below this section. The monitoring work described here has been planned as a self-contained project independent of any other related monitoring projects that may be occurring simultaneously in the same region. L-DEO is prepared to discuss coordination of their monitoring program with any related work that might be done by other groups insofar as this is practical and desirable.

Vessel-based Visual Monitoring

L-DEO's PSVOs will be based aboard the seismic source vessel and will watch for marine mammals near the vessel during daytime airgun operations and during any ramp-ups of the airguns at night. PSVOs will also watch for marine mammals near the seismic vessel for at least 30 minutes prior to the start of airgun operations after an extended shut-down (i.e., greater than approximately 8 minutes for this cruise). When feasible, PSVOs will conduct observations during daytime periods when the seismic system is not operating (such as during transits) for comparison of sighting rates and behavior with and without airgun operations and between acquisition periods. Based on PSVO observations, the airguns will be powered-down or shut-down when marine mammals are observed within or about to enter a designated exclusion zone.

During seismic operations in the northeast Atlantic Ocean off of Spain, at least five PSOs (four PSVOs and one Protected Species Acoustic Observer [PSAO]) will be based aboard the Langseth. L-DEO will appoint the PSOs with NMFS's concurrence. Observations will take place during ongoing daytime operations and nighttime ramp-ups of the airguns. During the majority of seismic operations, two PSVOs will be on duty from the observation tower (i.e., the best available vantage point on the source vessel) to monitor marine mammals near the seismic vessel. Use of two simultaneous PSVOs will increase the effectiveness of detecting animals near the source vessel. However, during meal times and bathroom breaks, it is sometimes difficult to have two PSVOs on effort, but at least one PSVO will be on duty. PSVO(s) will be on duty in shifts no longer than 4 hours in duration.

Two PSVOs will also be on visual watch during all daytime ramp-ups of the seismic airguns. A third PSAO will monitor the PAM equipment 24 hours a day to detect vocalizing marine mammals present in the action area. In summary, a typical daytime cruise would have scheduled two PSVOs on duty from the observation tower, and a third PSAO on PAM. Other

crew will also be instructed to assist in detecting marine mammals and implementing mitigation requirements (if practical). Before the start of the seismic survey, the crew will be given additional instruction on how to do so.

The Langseth is a suitable platform for marine mammal observations. When stationed on the observation platform, the eye level will be approximately 21.5 m (70.5 ft) above sea level, and the PSVO will have a good view around the entire vessel. During daytime, the PSVO(s) will scan the area around the vessel systematically with reticle binoculars (e.g., 7 x 50 Fujinon), Big-eye binoculars (25 x 150), and with the naked eye. During darkness, night vision devices will be available (ITT F500 Series Generation 3 binocular – image intensifier or equivalent), when required. Laser range-finding binoculars (Leica LRF 1200 laser rangefinder or equivalent) will be available to assist with distance estimation.

When marine mammals are detected within or about to enter the designated exclusion zone, the airguns will immediately be powered-down or shut-down if necessary. The PSVO(s) will continue to maintain watch to determine when the animal(s) are outside the exclusion zone by visual confirmation. Airgun operations will not resume until the animal is confirmed to have left the exclusion zone, or if not observed after 15 minutes for species with shorter dive durations (small odontocetes and pinnipeds) or 30 minutes for species with longer dive durations (mysticetes and large odontocetes, including sperm, pygmy sperm, dwarf sperm, killer, and beaked whales).

Vessel-based Passive Acoustic Monitoring

Vessel-based, towed PAM will complement the visual monitoring program, when practicable. PAM can be used in addition to visual observations to improve detection, identification, and localization of cetaceans. The PAM will serve to alert visual observers (if on

duty) when vocalizing cetaceans are detected. It is only useful when marine mammals call, but it does not depend on good visibility. It will be monitored in real time so that the PSVOs can be advised when cetaceans are detected.

One PSAO, an expert bioacoustician (in addition to the four PSVOs) with primary responsibility for PAM, will be onboard the Langseth. The towed hydrophones will ideally be monitored by the PSAO 24 hours per day while at the seismic survey area during airgun operations, and during most periods when the Langseth is underway while the airguns are not operating. However, PAM may not be possible if damage occurs to the array or back-up systems during operations. The primary PAM streamer on the Langseth is a digital hydrophone streamer. Should the digital streamer fail, back-up systems should include an analog spare streamer and a hull-mounted hydrophone. One PSAO will monitor the acoustic detection system by listening to the signals from two channels via headphones and/or speakers and watching the real-time spectrographic display for frequency ranges produced by cetaceans. The PSAO monitoring the acoustical data will be on shift for one to six hours at a time. All PSOs are expected to rotate through the PAM position, although the expert PSAO (most experienced) will be on PAM duty more frequently.

When a vocalization is detected while visual observations (during daylight) are in progress, the PSAO will contact the PSVO immediately, to alert him/her to the presence of cetaceans (if they have not already been seen), and to allow a power-down or shut-down to be initiated, if required. When bearings (primary and mirror-image) to calling cetacean(s) are determined, the bearings will be relayed to the PSVO(s) to help him/her sight the calling animal. During non-daylight hours, when a cetacean is detected by acoustic monitoring and may be close

to the source vessel, the Langseth crew will be notified immediately so that the proper mitigation measure may be implemented.

The information regarding the call will be entered into a database. Data entry will include an acoustic encounter identification number, whether it was linked with a visual sighting, date, time when first and last heard and whenever any additional information was recorded, position and water depth when first detected, bearing if determinable, species or species group (e.g., unidentified dolphin, sperm whale), types and nature of sounds heard (e.g., clicks, continuous, sporadic, whistles, creaks, burst pulses, strength of signal, etc.), and any other notable information. The acoustic detection can also be recorded for further analysis.

Reporting

PSO Data and Documentation

PSVOs will record data to estimate the numbers of marine mammals exposed to various received sound levels and to document apparent disturbance reactions or lack thereof. Data will be used to estimate numbers of animals potentially ‘taken’ by harassment. They will also provide information needed to order a power-down or shut-down of the airguns when a marine mammal is within or near the exclusion zone. Observations will also be made during daytime periods when the Langseth is underway without seismic operations. There will also be opportunities to collect baseline biological data during the transits to, from, and through the study area.

When a sighting is made, the following information about the sighting will be recorded:

1. Species, group size, age/size/sex categories (if determinable), behavior when first sighted and after initial sighting, heading (if consistent), bearing and distance from seismic

vessel, sighting cue, apparent reaction to the airguns or vessel (e.g., none, avoidance, approach, paralleling, etc.), and behavioral pace.

2. Time, location, heading, speed, activity of the vessel, sea state, visibility, and sun glare.

The data listed under (2) will also be recorded at the start and end of each observation watch, and during a watch whenever there is a change in one or more of the variables.

All observations and ramp-ups, power-downs, or shut-downs will be recorded in a standardized format. The PSOs will record this information onto datasheets. During periods between watches and periods when operations are suspended, those data will be entered into a laptop computer running a custom computer database. The accuracy of the data entry will be verified by computerized data validity checks as the data are entered and by subsequent manual checking of the database. These procedures will allow initial summaries of data to be prepared during and shortly after the field program, and will facilitate transfer of the data to statistical, graphical, and other programs for further processing and archiving.

Results from the vessel-based observations will provide:

1. The basis for real-time mitigation (airgun power-down or shut-down).
2. Information needed to estimate the number of marine mammals potentially taken by harassment, which must be reported to NMFS.
3. Data on the occurrence, distribution, and activities of marine mammals in the area where the seismic study is conducted.
4. Information to compare the distance and distribution of marine mammals relative to the source vessel at times with and without seismic activity.

5. Data on the behavior and movement patterns of marine mammals seen at times with and without seismic activity.

L-DEO will submit a comprehensive report to NMFS and NSF within 90 days after the end of the cruise. The report will describe the operations that were conducted and sightings of marine mammals near the operations. The report will provide full documentation of methods, results, and interpretation pertaining to all monitoring. The 90-day report will summarize the dates and locations of seismic operations, and all marine mammal sightings (i.e., dates, times, locations, activities, associated seismic survey activities, and associated PAM detections). The report will minimally include:

- Summaries of monitoring effort – total hours, total distances, and distribution of marine mammals through the study period accounting for Beaufort sea state and other factors affecting visibility and detectability of marine mammals;
- Analyses of the effects of various factors influencing detectability of marine mammals including Beaufort sea state, number of PSOs, and fog/glare;
- Species composition, occurrence, and distribution of marine mammals sightings including date, water depth, numbers, age/size/gender, and group sizes; and analyses of the effects of seismic operations;
- Sighting rates of marine mammals during periods with and without airgun activities (and other variables that could affect detectability);
- Initial sighting distances versus airgun activity state;
- Closest point of approach versus airgun activity state;
- Observed behaviors and types of movements versus airgun activity state;
- Numbers of sightings/individuals seen versus airgun activity state; and

- Distribution around the source vessel versus airgun activity state.

The report will also include estimates of the number and nature of exposures that could result in “takes” of marine mammals by harassment or in other ways. After the report is considered final, it will be publicly available on the NMFS and NSF websites at:

<http://www.nmfs.noaa.gov/pr/permits/incidental.htm#iha> and
<http://www.nsf.gov/geo/oce/encomp/index.jsp>.

In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner not permitted by the authorization (if issued), such as an injury, serious injury, or mortality (e.g., ship-strike, gear interaction, and/or entanglement), the L-DEO shall immediately cease the specified activities and immediately report the incident to the Incidental Take Program Supervisor, Permits and Conservation Division, Office of Protected Resources, NMFS, at 301-427-8401 and/or by email to Jolie.Harrison@noaa.gov and Howard.Goldstein@noaa.gov. The report must include the following information:

Time, date, and location (latitude/longitude) of the incident;

- Name and type of vessel involved;
- Vessel’s speed during and leading up to the incident;
- Description of the incident;
- Status of all sound source used in the 24 hours preceding the incident;
- Water depth;
- Environmental conditions (e.g., wind speed and direction, Beaufort sea state, cloud cover, and visibility);

- Description of all marine mammal observations in the 24 hours preceding the incident;

- Species identification or description of animal(s) involved;
- Fate of the animal(s); and
- Photographs or video footage of the animal(s) (if equipment is available).

L-DEO shall not resume its activities until NMFS is able to review the circumstances of the prohibited take. NMFS shall work with L-DEO to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. The L-DEO may not resume their activities until notified by NMFS via letter, email, or telephone.

In the event that L-DEO discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (i.e., in less than a moderate state of decomposition as NMFS describes in the next paragraph), the L-DEO will immediately report the incident to the Incidental Take Program Supervisor, Permits and Conservation Division, Office of Protected Resources, at 301-427-8401 and/or by email to Jolie.Harrison@noaa.gov and Howard.Goldstein@noaa.gov. The report must include the same information identified in the paragraph above this section. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with the L-DEO to determine whether modifications in the activities are appropriate.

In the event that L-DEO discovers an injured or dead marine mammal, and the lead PSO determines that the injury or death is not associated with or related to the authorized activities (e.g., previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), the L-DEO would report the incident to the Incidental Take Program Supervisor, Permits and Conservation Division, Office of Protected Resources, at 301-427-8401 and/or by email to Jolie.Harrison@noaa.gov and Howard.Goldstein@noaa.gov, within 24 hours

of the discovery. The L-DEO would provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS.

Estimated Take by Incidental Harassment

Except with respect to certain activities not pertinent here, the MMPA defines "harassment" as: any act of pursuit, torment, or annoyance which (i) has the potential to injure a marine mammal or marine mammal stock in the wild [Level A harassment]; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering [Level B harassment].

Level B harassment is anticipated and authorized as a result of the marine seismic survey in the northeast Atlantic Ocean. Acoustic stimuli (i.e., increased underwater sound) generated during the operation of the seismic airgun array are expected to result in the behavioral disturbance of some marine mammals. There is no evidence that the planned activities could result in injury, serious injury, or mortality for which L-DEO seeks the IHA. The required mitigation and monitoring measures will minimize any potential risk for injury, serious injury, or mortality.

The following sections describe L-DEO's methods to estimate take by incidental harassment and present the applicant's estimates of the numbers of marine mammals that could be affected during the seismic program in the northeast Atlantic Ocean. The estimates are based on a consideration of the number of marine mammals that could be harassed by seismic operations with the 18 airgun array to be used. The size of the 2D and 3D seismic survey area in 2013 is approximately 5,834 km (3,150.1 nmi), as depicted in Figure 1 of the IHA application.

L-DEO assumes that, during simultaneous operations of the airgun array and the other sources, any marine mammals close enough to be affected by the multibeam echosounder and sub-bottom profiler would already be affected by the airguns. However, whether or not the airguns are operating simultaneously with the other sources, marine mammals are expected to exhibit no more than short-term and inconsequential responses to the multibeam echosounder and sub-bottom profiler given their characteristics (e.g., narrow, downward-directed beam) and other considerations described previously in the notice of the proposed IHA (78 FR 17359, March 21, 2013). Such reactions are not considered to constitute “taking” (NMFS, 2001). Therefore, L-DEO provided no additional allowance for animals that could be affected by sound sources other than airguns.

L-DEO used densities presented in the CODA final report for surveys off northwest Spain in 2007 (Anonymous, 2009; Macleod et al., 2009) to estimate how many animals could be exposed during the survey. The density reported for “unidentified large whale” was allocated to the humpback whale because there have been a number of sightings of humpback whales off northwest Spain, although none were sighted in the CODA surveys and most other large whales were. Macleod et al. (2008) did not provide densities for beaked whale species, only “beaked whales,” therefore the density for beaked whales was allocated to Cuvier’s beaked whale, as this was the most numerous species of beaked whale sighted during surveys off northwest Spain (see Basto d’Anstrade, 2008). Also, the CODA report (Anonymous, 2008) discussed two predicted high-density areas for beaked whales, in the most north-westerly section (Sowerby’s beaked whale and northern bottlenose whale) and the most south-easterly section, the Gulf of Biscay (Cuvier’s beaked whale). Except for beaked whales and bottlenose dolphins, all reported densities were corrected for trackline detection probability ($f[0]$) and availability ($g[0]$) biases by

the authors of the CODA report. L-DEO chose not to correct the other densities, $f(0)$ and $g(0)$ are specific to the location and cetacean habitat. Although there is some uncertainty about the representativeness of the data and assumptions used in the calculations below. The CODA surveys were in July, 2007 (versus June to mid-July, 2013 for the seismic survey), and CODA survey block 3, the closest to the planned offshore survey area, includes waters closer to shore and is somewhat farther north (43 to 45° versus 42° North) and extends west to the north of Spain towards the Bay of Biscay. The approach used here is believed to be the best available approach.

The estimated numbers of individuals potentially exposed presented below are based on the 160 dB (rms) criterion currently used to estimate Level B harassment for all cetaceans. It is assumed that marine mammals exposed to airgun sounds at that received level could change their behavior sufficiently to be considered “harassment.” Table 3 shows the density estimates calculated as described above and the estimates of the number of different individual marine mammals that potentially could be exposed to greater than or equal to 160 dB (rms) during the seismic survey if no animals moved away from the survey vessel. The requested take authorization is given in the far right column of Table 3. For species for which densities were not calculated as described above, but for which there were Ocean Biogeographic Information System (OBIS) sightings around the Azores, L-DEO has requested take authorization for the mean group size for the species.

It should be noted that the following estimates of exposures to various sound levels assume that the planned survey would be completed; in fact, the sonified areas calculated using the planned number of line-kilometers have been increased by 25% to accommodate turns, lines that may need to be repeated, equipment testing, etc. As typical during offshore ship surveys, inclement weather and equipment malfunctions are likely to cause delays and may limit the

number of useful line-kilometers of seismic operations that can be undertaken. Also, any marine mammal sightings within or near the designated exclusion zones would result in shut-down of seismic operations as a mitigation measure. Thus, the following estimates of the numbers of marine mammals potentially exposed to 160 dB (rms) sounds are precautionary and probably overestimate the actual numbers of marine mammals that could be involved. These estimates assume that there would be no weather, equipment, or mitigation delays, which is highly unlikely.

The number of different individuals that could be exposed to airgun sounds with received levels greater than or equal to 160 dB (rms) on one or more occasions can be estimated by considering the total marine area that would be within the 160 dB (rms) radius around the operating seismic source on at least one occasion, along with the expected density of animals in the area. The number of possible exposures (including repeated exposures of the same individuals) can be estimated by considering the total marine area that would be within the 160 dB radius around the operating airguns, including areas of overlap. During the survey, the transect lines are closely spaced relative to the 160 dB distance. Thus, the area including overlap is 8.2 times the area excluding overlap, so a marine mammal that stayed in the survey area during the entire survey could be exposed approximately 8 times, on average. However, it is unlikely that a particular animal would stay in the area during the entire survey. The numbers of different individuals potentially exposed to greater than or equal to 160 dB (rms) were calculated by multiplying the expected species density times the anticipated area to be ensonified to that level during airgun operations excluding overlap. The area expected to be ensonified was determined by entering the planned survey lines into a MapInfo GIS, using the GIS to identify

the relevant areas by “drawing” the applicable 160 dB buffer zone (see Table 2) around each seismic line, and then calculating the total area within the buffer zone.

Table 3. Estimated densities of marine mammal species and estimates of numbers of marine mammals exposed to sound levels ≥ 160 dB during L-DEO's seismic survey in the northeast Atlantic Ocean (in the Deep Galicia Basin west of Spain), June to July, 2013.

Species	Reported/Estimated Density (#/km ²)	Calculated Take Authorization [i.e., Estimated Number of Individuals Exposed to Sound Levels ≥ 160 dB re 1 μ Pa] (includes 25% contingency)	Take Authorization with Additional 25% (includes increase to mean group size) ²	Approximate Percentage of Estimated of Regional Population (Authorized Take) ¹
Mysticetes				
North Atlantic right whale	0	0	0	0
Humpback whale	0.001	8	2	0.07 (0.02)
Minke whale	0	0	3	0 (<0.01)
Sei whale	0.002	16	106	0.13 (0.9)
Fin whale	0.019	153	1,002	0.62 (4.03)
Blue whale	0	0	3	0 (0.32)
Odontocetes				
Sperm whale	0.003	24	159	0.18 (1.21)
Kogia spp. (Pygmy and dwarf sperm whale)	0	0	0	0 (0)
Cuvier's beaked whale	0.004	32	32	0.46 (0.46)
Northern bottlenose whale	0	0	4	0 (0.01)
<u>Mesoplodon</u> spp. (i.e., True's, Gervais', Sowerby's, and Blainville's beaked whale)	0	0	7	0 (0.1)
Bottlenose dolphin	0.005	40	40	0.21 (0.21)
Atlantic spotted dolphin	0	0	0	0 (0)
Striped dolphin	0.047	378	378	0.56 (0.56)
Short-beaked common dolphin	0.077	620	620	0.53 (0.53)
Risso's dolphin	0	0	4	0 (0.02)
Pygmy killer whale	0	0	0	NA (NA)
False killer whale	0	0	10	NA (NA)
Killer whale	0	0	5	NA (NA)
Short-finned pilot whale	0	0	5	0 (<0.01)
Long-finned pilot whale	0.001	8	8	<0.001 (<0.01)

NA = Not available or not assessed.

¹ Stock sizes are best populations from NMFS Stock Assessment Reports (see Table 2 in above).

² Requested take authorization was increased to mean group size for species for which densities were not available but that have been sighted near the survey area.

Applying the approach described above, approximately 6,437 km² (1,876.7 nmi²) (approximately 8,046 km² [2,345.8 nmi²] including the 25% contingency) would be within the 160 dB isopleth on one or more occasions during the survey. This approach does not allow for turnover in the marine mammal populations in the area during the course of the survey, so the actual number of individuals exposed may be underestimated, although the conservative (i.e., probably overestimated) line-kilometer distances used to calculate the area may offset this. Also, the approach assumes that no cetaceans would move away or toward the trackline as the Langseth approaches in response to increasing sound levels before the levels reach 160 dB (rms). Another way of interpreting the estimates that follow is that they represent the number of individuals that are expected (in the absence of a seismic program) to occur in the waters that would be exposed to greater than or equal to 160 dB (rms).

The estimate of the number of individual cetaceans by species that could be exposed to seismic sounds with received levels greater than or equal to 160 dB re 1 µPa (rms) during the survey is (with 25% contingency) as follows: 2 humpback, 106 sei, 1,002 fin, 3 blue, and 159 sperm, which would represent 0.02, 0.9, 4.03, 0.32, and 1.21% of the affected regional populations, respectively. In addition, 43 beaked whales, (including 32 Cuvier's, 4 northern bottlenose, and 7 Mesoplodon beaked whales) could be taken by Level B harassment during the seismic survey, which would represent 0.46, 0.01, and 0.1% of the regional populations. Most of the cetaceans potentially taken by Level B harassment are delphinids; bottlenose, striped, and short-beaked common, dolphins, are estimated to be the most common delphinid species in the area, with estimates of 40, 378, and 620, which would represent 0.21, 0.56, and 0.53% of the regional populations, respectively.

Encouraging and Coordinating Research

L-DEO and NSF will coordinate the planned marine mammal monitoring program associated with the seismic survey with other parties that may have interest in this area. L-DEO and NSF will coordinate with applicable U.S. agencies (e.g., NMFS), and will comply with their requirements.

Negligible Impact and Small Numbers Analyses and Determinations

NMFS has defined “negligible impact” in 50 CFR 216.103 as “...an impact resulting from the specified activity that cannot be reasonably expected to, and is not reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment or survival.”

In making a negligible impact determination, NMFS evaluated factors such as:

- (1) The number of anticipated injuries, serious injuries, or mortalities;
- (2) The number, nature, and intensity, and duration of Level B harassment (all relatively limited); and
- (3) The context in which the takes occur (i.e., impacts to areas of significance, impacts to local populations, and cumulative impacts when taking into account successive/contemporaneous actions when added to baseline data);
- (4) The status of stock or species of marine mammals (i.e., depleted, not depleted, decreasing, increasing, stable, impact relative to the size of the population);
- (5) Impacts on habitat affecting rates of recruitment/survival; and
- (6) The effectiveness of monitoring and mitigation measures (i.e., the manner and degree in which the measure is likely to reduce adverse impacts to marine mammals, the likely effectiveness of the measures, and the practicability of implementation).

For reasons stated previously in the document, in the notice of the proposed IHA (78 FR 17359, March 21, 2013) and based on the following factors, the specified activities associated

with the marine seismic survey are not likely to cause PTS, or other non-auditory injury, serious injury, or death. The factors include:

(1) The likelihood that, given sufficient notice through relatively slow ship speed, marine mammals are expected to move away from a noise source that is annoying prior to its becoming potentially injurious;

(2) The potential for temporary or permanent hearing impairment is relatively low and would likely be avoided through the implementation of the power-down and shut-down measures; and

(3) The likelihood that marine mammal detection ability by trained PSOs is high at close proximity to the vessel.

No injuries, serious injuries, or mortalities are anticipated to occur as a result of L-DEO's planned marine seismic survey, and none are authorized by NMFS. Table 3 of this document outlines the number of authorized Level B harassment takes that are anticipated as a result of these activities. Further, the seismic surveys will not take place in areas of significance for marine mammal feeding, resting, breeding, or calving and will not adversely impact marine mammal habitat.

Many animals perform vital functions, such as feeding, resting, traveling, and socializing, on a diel cycle (i.e., 24 hr cycle). Behavioral reactions to noise exposure (such as disruption of critical life functions, displacement, or avoidance of important habitat) are more likely to be significant if they last more than one diel cycle or recur on subsequent days (Southall et al., 2007). While seismic operations are anticipated to occur on consecutive days, the estimated duration of the survey would last no more than 39 days. Additionally, the seismic survey will be increasing sound levels in the marine environment in a relatively small area surrounding the

vessel (compared to the range of the animals), which is constantly travelling over distances, and some animals may only be exposed to and harassed by sound for less than a day.

As mentioned previously, NMFS estimates that 20 species of marine mammals under its jurisdiction could be potentially affected by Level B harassment over the course of the IHA. The population estimates for the marine mammal species that may be taken by Level B harassment were provided in Table 3 of this document.

NMFS has determined, provided that the aforementioned mitigation and monitoring measures are implemented, the impact of conducting a marine seismic survey in the northeast Atlantic Ocean, June to July, 2013, may result, at worst, in a modification in behavior and/or low-level physiological effects (Level B harassment) of certain species of marine mammals.

While behavioral modifications, including temporarily vacating the area during the operation of the airgun(s), may be made by these species to avoid the resultant acoustic disturbance, the availability of alternate areas within these areas for species and the short and sporadic duration of the research activities, have led NMFS to determine that the taking by Level B harassment from the specified activity will have a negligible impact on the affected species in the specified geographic region. Due to the nature, degree, and context of Level B (behavioral) harassment anticipated and described (see “Potential Effects on Marine Mammals” section above) in this notice, the activity is not expected to impact rates of annual recruitment or survival for any affected species or stock, particularly given the NMFS and the applicant’s proposal to implement a mitigation and monitoring plans to minimize impacts to marine mammals.

The requested take estimates represent small numbers relative to the affected species or stock sizes (i.e., all are less than or equal to 4%). See Table 3 for the authorized take number of marine mammals.

Impact on Availability of Affected Species or Stock for Taking for Subsistence Uses

Section 101(a)(5)(D) of the MMPA also requires NMFS to determine that the authorization will not have an unmitigable adverse effect on the availability of marine mammal species or stocks for subsistence use. There are no relevant subsistence uses of marine mammals in the study area (in the northeast Atlantic Ocean) that implicate MMPA section 101(a)(5)(D).

Endangered Species Act

Of the species of marine mammals that may occur in the survey area, several are listed as endangered under the ESA, including the North Atlantic right, humpback, sei, fin, blue, and sperm whales. L-DEO did not request take of endangered North Atlantic right whales due to the low likelihood of encountering this species during the cruise. Under section 7 of the ESA, NSF has initiated formal consultation with the NMFS, Office of Protected Resources, Endangered Species Act Interagency Cooperation Division, on this seismic survey. NMFS's Office of Protected Resources, Permits and Conservation Division, has initiated and engaged in formal consultation under section 7 of the ESA with NMFS's Office of Protected Resources, Endangered Species Act Interagency Cooperation Division, on the issuance of an IHA under section 101(a)(5)(D) of the MMPA for this activity. These two consultations were consolidated and addressed in a single Biological Opinion addressing the direct and indirect effects of these independent actions. In May 2013, NMFS issued a Biological Opinion and concluded that the action is not likely to jeopardize the existence of cetaceans and sea turtles and included an Incidental Take Statement (ITS) incorporating the requirements of the IHA as Terms and Conditions of the ITS is likewise a mandatory requirement of the IHA. The Biological Opinion also concluded that designated critical habitat of these species does not occur in the action area and would not be affected by the survey.

National Environmental Policy Act

With L-DEO's complete application, NSF and L-DEO provided NMFS an "Environmental Analysis of a Marine Geophysical Survey by the R/V Marcus G. Langseth in the Northeast Atlantic Ocean, June-July 2013," prepared by LGL Ltd., Environmental Research Associates, on behalf of NSF and L-DEO. The EA analyzes the direct, indirect, and cumulative environmental impacts of the planned specified activities on marine mammals including those listed as threatened or endangered under the ESA. NMFS, after review and evaluation of the NSF EA for consistency with the regulations published by the Council of Environmental Quality (CEQ) and NOAA Administrative Order 216-6, Environmental Review Procedures for Implementing the National Environmental Policy Act, prepared an independent EA titled "Environmental Assessment on the Issuance of an Incidental Harassment Authorization to the Lamont-Doherty Earth Observatory to Take Marine Mammals by Harassment Incidental to a Marine Geophysical Survey in the Northeast Atlantic Ocean, June to July 2013." After considering the EA, the information in the IHA application, Biological Opinion, and the Federal Register notice, as well as public comments, NMFS has determined that the issuance of the IHA is not likely to result in significant impacts on the human environment and has prepared a Finding of No Significant Impact (FONSI). An Environmental Impact Statement is not required and will not be prepared for the action.

Authorization

NMFS has issued an IHA to L-DEO for the take, by Level B harassment, of small numbers of marine mammals incidental to conducting a marine seismic survey in the northeast Atlantic Ocean, provided the previously mentioned mitigation, monitoring, and reporting requirements are incorporated.

Dated: June 3, 2013.

Helen M. Golde,
Deputy Director,
Office of Protected Resources,
National Marine Fisheries Service.

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